VIRGINIA NRCS RUSLE2 QUICK GUIDE

GETTING RUSLE2 RESULTS
for VIRGINIA PASTURES

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BACKGROUND

1. **Current version of RUSLE2 is not designed for pasture situations**

    Using RUSLE2 to estimate sheet & rill erosion from permanent pastures can be problematic. RUSLE2 is best for modeling annual cropping systems when residue removal and soil disturbance is done by traditional "one-pass" equipment. The current version of RUSLE2 does not contain detailed options for modeling how grazing animals remove residue and disturb soil in a permanent pasture situation. The user must guess at which grazing operation to use, how frequently to call in that operation, and how to adjust vegetation yields to account for the impact of the grazing. The net result is that RUSLE2 can generate soil loss for grazing situations, but it can be difficult to know if the results are accurate.

2. **"RUSLE2 Graze" is on the way**

    A new version of RUSLE2 with improved capacity for modeling grazing has been under development for years. Until that version of RUSLE2 is released for NRCS use, the current version of RUSLE2 is the official NRCS tool for estimating sheet & rill erosion for pasture in Virginia.

3. **Use this procedure for all VA pasture situations until "RUSLE2 Graze" is available**

    To increase consistency and reduce the potential for gross errors in RUSLE2 pasture calculations, VA NRCS Ecological Sciences personnel with assistance from former Regional NRCS Agronomist Gene Hardee have developed the following streamlined system for estimating sheet & rill erosion from pasture situations. NRCS in Virginia will use this approach until "RUSLE2 Graze" is released.

4. **To know if and how this applies in other states, talk to appropriate NRCS person in that state.**

STEP A.   ASSESS THE PASTURE

1. **Use field observations and professional judgment to determine average annual canopy cover**

    Average annual canopy cover refers to the percentage of vertically falling raindrops that are theoretically intercepted by living plant canopy over the entire year. Use field observations such as line transect measurements and professional judgment to determine this number.

2. **Collect other relevant RUSLE2 input data, including soil types and LS values**

STEP B. SELECT THE PASTURE CROP MANAGEMENT FILE THAT BEST FITS

1. **Similar options available for all CMZs in Virginia**

    The most recent version of CMZs 64, 66, and 67 North all contain similar crop management files for permanent pasture in the "a. Single Year/Single Crop Templates" folder. The eight files to choose from are shown in the picture below.
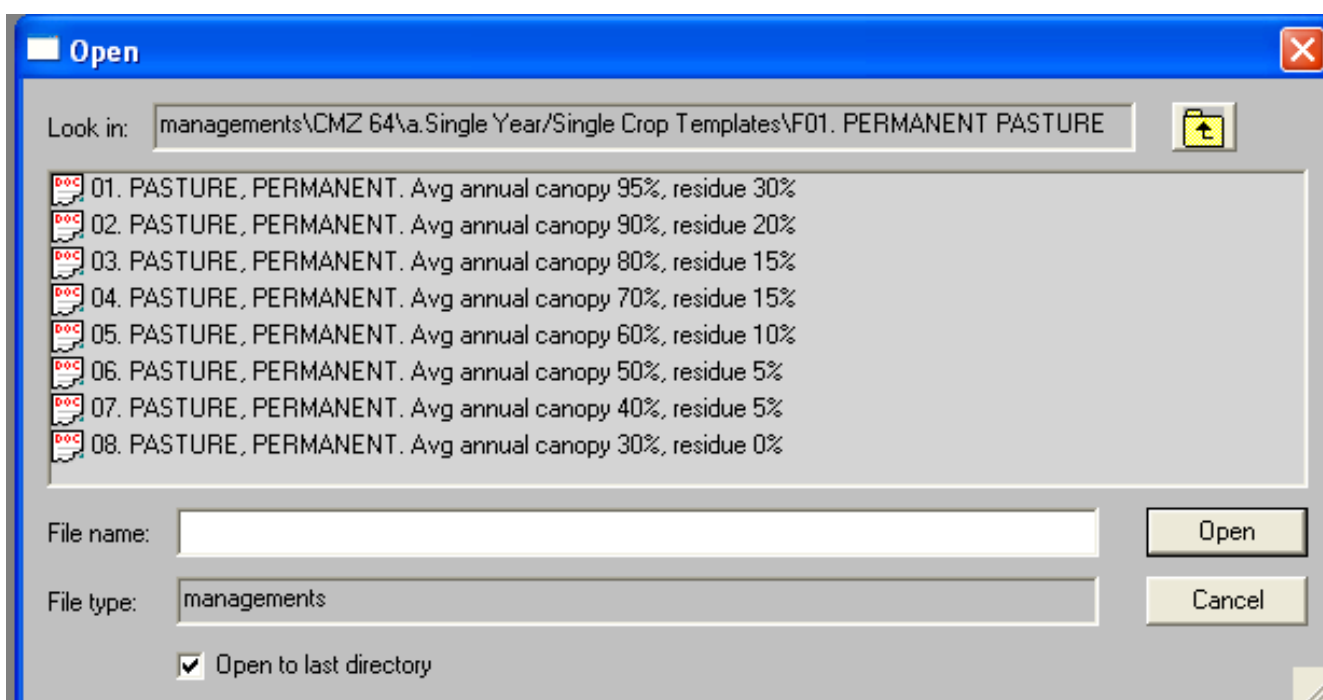
2. **Select the crop management template with average annual canopy % that best matches**

   Proceed through a standard RUSLE2 calculation using a plan, worksheet, or profile. For your crop management factor, select the permanent pasture template with "Avg. annual canopy" number in the template name that best matches your assessment of the real-life pasture.

3. **Do not focus on the residue % in the template name**

   RUSLE2 defines residue as dead material on the soil surface. In RUSLE2, canopy cover can be located directly above residue cover. Thus, the sum of percent canopy cover and percent residue cover can exceed 100%. The percent residue number is included in the template name primarily to emphasize that, especially when grazing is well managed, canopy is not the only material intercepting raindrops and slowing runoff.

4. **DO NOT modify dates, operations, yields or any element inside the selected management**

   We have carefully crafted these pasture templates to tell RUSLE2 the percentage of canopy present across the year. Percent canopy cover is what you are trying to match to your real-life situation. We don't expect the frequency of grazing or other factors within the management template you select to exactly match your real-life situation. Note that this approach should be used for pasture scenarios only. For all other RUSLE2 calculations in Virginia, we do recommend customizing to make crop management files match real-life dates and operations to the maximum extent possible.